REPORT ON ARSENIC IN YELLOWKNIFE.

by

United Steelworkers/National Indian Brotherhood/University of Toronto.

POLAR PAM 3965 POLARPAM

Pam:615.9:(*473) USA

Rec'd:
Order No.:
Invoice: I.L.L. Xerox
Acc. No: DIAND Yellowknife

REPORT ON ARSENIC IN YELLOWKNIFE.

by

United Steelworkers/National
Indian Brotherhood/University
of Toronto.

From office of United Steelworkers Jan/77

Yellowknife, in the Northwest Territories, has undergone an intensive arsenic check-up at least once every decade. Each examination has been launched after an arsenic poisoning scare swept the town. And each series of tests was meant to bury, once and for all, the population's anxieties about the toxic substance.

The latest federal arsenic investigation of the Territorial capital has just been completed. It was almost two years in the making. Federal investigators now insist the most recent arsenic scare was unfounded. They claim it was a scare concocted by "irresponsible journalists," " and was "not based on fact."

But an independent survey of Yellowknife conducted jointly by the National Indian Brotherhood, the United Steel Workers of America, and the University of Toronto, suggests otherwise. The independent study notes that arsenic levels in Yellowknife's soil, vegetation and water are horrendously high - higher than anywhere in North America. The independent investigators state that government testers may have manipulated their study in order to minimize the amount of arsenic dumped on Yellowknife by a gold mining operation. Furthermore, the independent group states that a federal arsenic hair survey of Yellowknife citizens was carried out unscientifically. A separate hair survey was conducted to prove this point. And finally, whereas Health Minister Marc Lalonde and his officials state that Yellowknife has a cancer death rate

LIBRARY
DEPT. OF I.A. & N.D.
YELLOWKNIFE, N.W.T.

Cont'd.../2

BOREAL INSTITUTE
LIBRARY
45744

LIBRARY
DEPT. OF I.A. & N.D.
YELLOWKNIFE, N.W.T.

"considerably less than the national average," the independent investigators have uncovered Statistics Canada figures that refute this claim. Ed McCrae, the Steel Workers staff representative in Yellowknife, calls the government study "a text book example of a cover-up."

In order to understand the shenanigans surrounding the Yellowknife arsenic report, one must first appreciate the reason an investigation took place. The 1976 federal arsenic investigation was launched after a C.B.C. radio program made public an earlier 1966 federal study of arsenic in Yellowknife. The 1966 investigation was triggered when two Indian children died after eating arsenic contaminated snow. It had been completed in 1969, but was unavailable to the public. The producer of the documentary that made the health survey's findings public had asked for the 1969 report on three different occasions, including the day the documentary was aired. Each time, Rene Mercier, the information officer for the Health Protection Branch of Health and Welfare Canada, stated that the report was an "internal document." The report remained squirreled away until the dramatic C.B.C. broadcast of January 8th, 1975.

On that broadcast, an analysis of the 1969 study was made by Dr. Kingsley Kay, a toxicologist working with New York's Mount Sinai Hospital. Kay had first become familiar with Yellowknife's arsenic difficulties in 1956. At that time, he was working with Canada's Department of Health and Welfare and was assigned to investigate arsenic damages in the northern gold mining town when cattle sent to Yellowknife died after drinking arsenic contaminated water.

On the C.B.C. program, Dr. Kay made these comments:

"What we've got here," he said, "is a situation like the famous study of syphilitics conducted amongst black people in the southern United States twenty years ago. The U.S. public health service decided for research purposes to divide a group of men suffering from syphilis into two groups. One group was given anti-biotics, and the other was denied treatment. The two groups were observed from time to time in order to compare the progress of men given medical attention, to those who went without treatment.

"The residents of Yellowknife, like the men in the U.S. experiment, are much like guinea pigs.

"We did an arsenic study of Yellowknife in 1955, the government of Canada has done another study in 1966, and perhaps they're going to do another study in 1976.

"But the fact of the matter is, we're experimenting. It was known in 1940 that arsenic exposure causes cancer, and when we came to the conclusion in 1976 or 1980 - and it will be about then - that these people have much more cancer than other people, then we'll say something has to be done about it."

To most of us, arsenic is a substance quaint little old ladies dump into the tea of unfortunate gentleman callers. That, after all, is the way two beguiling spinsters bump off visitors in the popular play and movie entitled "Arsenic and Old Lace."

Cont'd.../4

But little old ladies notwithstanding, arsenic does much more than poison people. Arsenic can produce skin lesions, nervous disorders, respiratory ailments, and worst of all, cancer. The unreleased federal survey of Yellowknife uncovered a high prevalence of: 1) skin lesions; 2) respiratory diseases; 3) codable electro-cardio-graphic changes; 4) a higher than expected death rate due to diseases of the respiratory system; 5) an excess number of cancer deaths. Although the 1969 report was reluctant to totally blame arsenic exposure for all the maladies, the diseases it found are all symptoms concident with arsenic exposure. When the citizens of Yellowknife were informed by the C.B.C. of the federal findings, they were outraged. They were shocked at the reports contents, and angry that no one had bothered to inform them of the 1969 discoveries. Some even threatened to sue the officials responsible for keeping the lid on the report's contents.

Bill Walton, a former Yellowknife alderman, furiously suggested that "The bureaucratic asses who decided...whether or not the study ought to be released should be hung from the nearest tree."

The federal government reacted to the hostile response by promising to improve medical services in Yellowknife. The government also announced it was launching another arsenic investigation - the one they have just completed.

Yellowknife's arsenic difficulties stem from the fact that it's a gold mining town. Two gold mining operations bracket

either end of the town site. However, the gold bearing ore, dug up by the mining companies contains more arsenic than precious metal. And dumping the arsenic left over after the gold has been extracted, has its drawbacks: vegetation dies, animals and fish are poisoned and waterways are contaminated. It's a public relations problem of the highest magnitude. Fortunately for Con Mine, and Giant Yellowknife Mines Limited, the companies operating in Yellowknife, the federal government appears to share their public relations concerns.

A short while back, the head of the air pollution control section of Canada's northwest region wrote a memorandum to his Yellowknife district manager. It dealt with the Canadian "industrial hygiene standard for arsenic." The letter began...

> "I was advised yesterday afternoon that (the U.S.) organization that sets industrial hygiene standards for in-plant environmental conditions, has recommended that the previous arsenic 8 hour exposure limit, be reduced from 500 micrograms per cubic meter to 4 micrograms per cubic meter."

The Environmental Protection Service chief concludes his memorandum this way: "It would be advisable not to release this information to the public as it may cause undue concern at this time." A wise public relations approach, but questionable from the standpoint of public health. In the United States, the recommendation was made public in order to warn everyone of the potential danger of arsenic exposure.

Cont'd.../6

DEPT. OF I. A. & N.D.
YELLOWKNIFE, N.W.T.

The U.S. National Institute of Occupational Safety and Health was, after all, recommending to all who would listen, a drastic reduction in the arsenic exposure standard. The U.S. agency eventually won its case by producing studies proving that arsenic is a more potent cancer causing agent than anyone previously imagined!

It would be relatively easy to develop a conspiracy theory involving governments and industry covering up health information. We could cite examples of hidden data on mercury loaded fish, buried information on asbestos dust levels in mines and mills, and concealed information on radiation levels in Canadian uranium mines. Even the most naive researcher can't help but trip over the ties that bind industry and governments in occupational and environmental health controversies. But to then conclude that our elected representatives are evil men plotting with money-grubbing industrialists to minimize industrially induced diseases simplifies political realities.

The best of people enter public life for altruistic reasons. The worst jump onto the public stage merely to advance their personal careers. Few would consciously persue policies that threaten the life and limb of Canada's working people.

Politicians and their advisors are constantly bombarded with mini-crises. Much of their time is spent either maneuvering to keep catastrophe from breaking out, or patching up after it has occurred. When confronted with a controversy, deci[illegible]are

LIBRARY
DEPT. OF I. A. & N.D.
YELLOWKNIFE, N.W.T.

Cont'd.../7

made according to the single criterion of political self preservation. And if that means siding with large corporations in environmental or occupational health crises in order to save one's political skin, so be it.

Yellowknife is a case in point. Federal politicians and their health advisors were embarassed by the publicity surrounding the uncovering of the 1969 "internal document" on arsenic, and subsequently took steps to rehabilitate their reputations. Apparently the rehabilitation process involves belittling Yellowknife's arsenic problems.

In September of this year, for example, a federal environmental engineer told the press that the facts gathered in the 1976 government study proved that the "arsenic scare was not based on fact." Health Minister Marc Lalonde said that Yellowknife's "mine operations do not pose a hazard to the health of the general population of Yellowknife," and Dr. R.D.P. Eaton, medical officer for the North West Territories said "the arsenic scare has been laid to rest."

Consider the facts uncovered in the 1976 study. Snow samples from the Yellowknife area were examined for arsenic content. Eleven out of twelve samples exceed the government's "emergency" level for arsenic. One sample is 38 times above the "emergency" level.

Cont'd.../8

At the mouth of Baker Creek, where Giant Mine's tailings enter Yellowknife Bay, the study finds the arsenic content of water 151 times above the government's "emergency" drinking standard.

The study notes that Yellowknife soil has as much as 2,000 times more arsenic than is found in areas without a source of contamination.

Dr. Tom Hutchinson, the former head of the University of Toronto's Institute of Environmental Sciences is familiar with Yellowknife from his own studies of the area. After examining the government data, he concluded that "Yellowknife is probably the most severely arsenic contaminated area in the world." Yet the government blithely states there is no arsenic problem in Yellowknife.

Nevertheless, the most disturbing section of the government study deals with the amount of arsenic Giant Mines daily spews into the Yellowknife air. It's important to know the amount released, of course, because this is the arsenic that mixes into the Yellowknife soil, is bound up in the Yellowknife plants, and is breathed in by Yellowknife's citizens. The government investigators monitored the effluent from Giant Mines' stack for a one week period.

Cont'd.../9

Environmentalists are usually skeptical when companies police their own pollution levels. Generally, independent tests show that companies underestimate how much waste they expel. In Yellowknife, the reverse is true - Giant Mines admits dumping more arsenic than the government study says the company is dumping.

Compare the government's arsenic effluent figures with the amount of arsenic Giant Mines acknowledges belching into the environment. One week before the government survey began, company records show Giant Mines dumping 400 per cent more arsenic than the government investigators recorded in their week of monitoring. One week after the government finished its testing, company records again reveal 400 per cent more arsenic shooting up Giant Mines' stack than is reported by the government. On no single day throughout the year do the company's effluent measurements approach the low figures reported in the government survey.

Either the government study is fraudulent, or it's inadequate. Either the government data has been manipulated (possibly by monitoring in a time of low production), or the data has been gathered incorrectly. Either way, the government figures are questionable.

Cont'd.../10

The government study also attempted to assess whether Yellowknife residents inhale and ingest the arsenic falling on the community from Giant Mines' stack. Since a portion of arsenic inside a person's body eventually grows out their hair, the simplest way to detect arsenic exposure is to clip hair from someone's scalp, and examine it for arsenic content.

In the government survey, seven hundred Yellowknife citizens volunteered clumps of hair for scientific evaluation. But because the government study is based on a volunteer sample, it is scientifically invalid. In order to be scientifically valid, a population survey must be based on a randomly chosen group of people, or on a sample of the entire community. Studies based volunteer samples lack scientific reliability.

Contrast the government study to a recent hair sampling survey conducted jointly by the National Indian Brotherhood (NIB), the United Steel Workers of America, and the University of Toronto's Department of Chemical Engineering (U of T). The independent survey is based on hair samples clipped from one hundred per cent of the men working in Giant Mines' smelter, and one hundred per cent of the children living in the community across the Bay from Giant Mines' operations.

Unlike the government study, the NIB-Steel Worker-U of T study also used a control group. The Yellowknife samples were

Cont'd.../11

compared for arsenic content to hair samples cut from a randomly picked group of Steel Workers employed in Whitehorse in the Yukon, and a randomly chosen group of Indian children from the Whitehorse Indian Band. The two sets of samples were analysed in the University of Toronto's nuclear reactor.

None of the Indian children and none of the Steel Workers in Whitehorse had an arsenic hair level above one part per million (ppm). In Yellowknife, all but two of the thirty-nine Indian children samples had an arsenic hair level above one ppm, and 44 percent of the children had an elevated level above 5 ppm. One eleven year old boy had a level of 28 ppm of arsenic in his hair. The government hair survey found no Indian children with elevated arsenic hair levels.

Noel Starblanket, President of the National Indian Brotherhood wondered, "Why weren't these children found by Ottawa in their survey? This is the second time we've done independent tests in Yellowknife of Indian children" he said, "and both times we've found elevated arsenic levels. And it looks from this survey that the Indian children are still being exposed to arsenic. I tell you I'm getting pretty damn mad about the blasé way federal health officials are treating this problem."

As expected, the Yellowknife Steel Workers had extremely high arsenic hair levels, as high as 278 ppm. The federal study also found high levels in Yellowknife Steel Workers and concluded that "arsenic exposures in the working environment at Giant Mine should be monitored annually."

Ed McCrae of the Steel Workers says, "I don't want more measurements, I want a clean-up. After all, it's been almost two years since they did their survey and we're finding that arsenic levels in the men haven't been reduced one bit."

Dr. Robert Jervis, Dean of the University of Toronto's Chemical Engineering Department agrees that Yellowknife citizens should be concerned about arsenic contamination. "According to our study, Yellowknife has an arsenic problem while Whitehorse does not. Both the workers and the children we tested in Yellowknife have higher arsenic levels that they would have if the gold mining operation wasn't dumping it's arsenic."

But what exactly does elevated arsenic levels mean for a community?

Well in the spring of 1975, the U.S. National Cancer Institute released a cancer map of the United States. The map charted the U.S. counties with the highest incidence of cancer. High cancer rates were observed throughout the United States, around copper and lead smelters.

"Our tentative conclusion," says Dr. William Blot of the National Cancer Institute, "is there is a community-wide risk from arsenic emissions from these smelters."

It would appear that citizens of Yellowknife run a similar risk. Consider the cancer death statistics tabulated by the Vital Statistics Section of Statistics Canada.

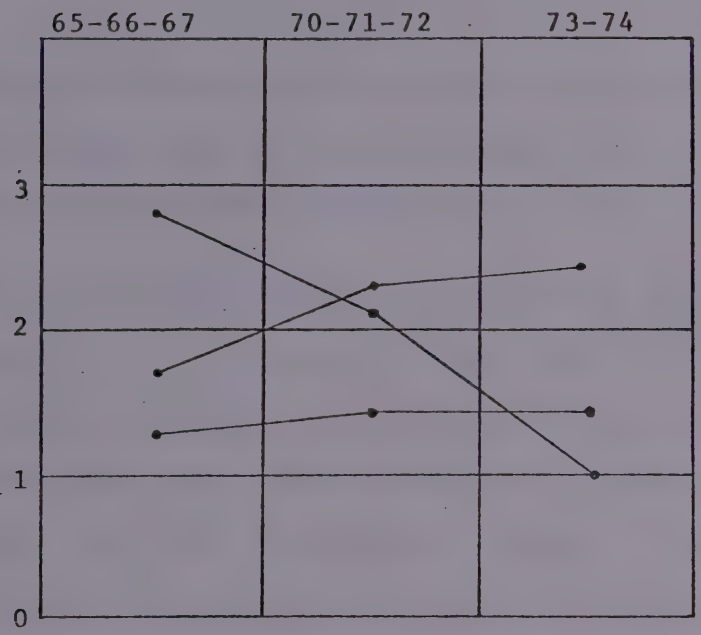
Federal demographers were asked to collect cancer death statistics for Whitehorse and Yellowknife, for the years 1965, 1966 and 1967, and the years 1970, 1971 and 1972. Three year periods were compared in order to minimize the distorting affect one or two deaths in a given year, might have on the towns' mortality rates. Whitehorse was chosen for comparison because it shares Yellowknife's northern climate, but not its grotesque arsenic levels.

Cancers usually take twenty or more years to develop. In the mid-sixties, Yellowknife's gold mining operations had been dumping arsenic for less than twenty years. The town's cancer death rate should be relatively low in the sixties, but

Cont'd.../13

STANDARDIZED CANCER DEATH RATE PER

1,000 POPULATION



Horse

wknife

a

White Horse	2.8	2.1	1
Yellowknife	1.7	2.3	2.4
Canada	1.3	1.4	1.4

increase as time passes. In the 1970's, if the twenty year cancer rule holds true, Yellowknife's cancer death rate should be climbing. Whitehorse, on the other hand, should not experience a corresponding climb in cancer deaths for the time periods in question.

Statistics Canada figures confirm this hypothesis. The graph accompanying this article indicates that arsenic appears to now be taking its toll in Yellowknife lives.

Statistics Canada further reports that according to its latest figures - for the years 1973 and 1974 - Yellowknife cancer deaths are again slightly up. Federal Health Minister, Marc Lalonde, however, has stated that Yellowknife has a cancer death rate "considerably less than the National average." His medical advisor for the Northwest Territories, Dr. R.D.P. Eaton, claims "Yellowknife's cancer death rate is one quarter the National cancer death rate." Apparently neither of them checked with the demographers at Statistics Canada.

Nevertheless, it is impossible to prove beyond a shadow of a doubt that arsenic is the cause of Yellowknife's climbing cancer death rate. Yellowknife's population is small and the number of cancer deaths observed were correspondingly small. It is difficult to reach iron clad conclusions when working with small numbers. But it is also impossible to state that Yellowknife's excellerating cancer death rate - especially when compared to the national rate - is not due to arsenic exposure. In fact, medical evidence from the United States and elsewhere suggests that arsenic is indeed a major cause of cancer in exposed communities.

Cont'd.../14

If the federal government follows its usual time table, Yellowknife is not due for another arsenic health check-up until 1986. Presumably, the 1986 check-up will uncover similar arsenic evidence to that uncovered in 1956 and 1966, and independently in 1976. And maybe then, a serious clean-up will be instigated.

As Dr. Kingsley Kay of Mount Sinai said on the CBC program that triggered the 1976 arsenic investigation, "When we come to the conclusion in 1980... that these people have much more cancer than other people, then we'll say something has to be done about it." Maybe then. Maybe.

- 30 -

Date Due

45744 Pam:615.9:(*473)
USA

United Steelworkers of America
AUTHOR

Report on arsenic in Yellowknife.
TITLE

DATE LOANED	BORROWER'S NAME	DATE DUE

45744

BOREAL INSTITUTE FOR NORTHERN STUDIES, LIBRARY
THE UNIVERSITY OF ALBERTA
EDMONTON, ALBERTA T6G 2E9
CANADA

University of Alberta Library
0 1620 0335 4659